127 Vertigo and Disequilibrium

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Definition

The examination of patients with vertigo and disequilibrium consists of an examination of the sensory structures of hearing, balance, vision, and proprioception, as well as central nervous system connections that integrate the sensory information produced by these structures. The sense organs and their central connections can be evaluated by stimulating one of the sensory systems and observing or measuring the reflex response. Most clinical and laboratory evaluations depend on providing a precisely defined stimulus and observing or precisely measuring a response. In this chapter we describe and discuss the evaluation conducted in the clinic or at the bedside and briefly describe tests that require a more sophisticated laboratory.

Technique

First, observe the patient's overall appearance, gait, and posture. A patient who is undergoing an acute labyrinthine attack will be pale, sweaty, unable to stand or walk, and have a tendency to fall in one direction or another. When standing, there may be an asymmetry to the posture and the gait will be leaning, causing the patient's upper body inadvertently to bump into door frames. Wobbling from side to side is generally not observed during true labyrinthine attacks but can occur in chronic disequilibrium from bilateral loss of vestibular function or in disorders of the central nervous system. It is also seen in hysterics and malingerers and in response to centrally active drugs. Abnormalities in gait and posture can be elicited in patients with milder problems by reducing the sensory information available for orientation or by making the task more difficult. Have the patient bring the feet close together and close the eyes. Observe for leaning and sway. This can be made harder by asking the patient to rock up on the balls of the feet or back on the heels, a trick sometimes used by the highway patrol to examine for the central effects of alcohol. Consistent swaying or leaning in one direction is a sign of asymmetric vestibular input and suggests disease of labyrinthine origin. Swaying back and forth is due to bilateral loss of vestibular function, disorders of the central connections, central nervous system active drugs, malingering, or hysteria.

Next, examine the ears. Examine the tympanic membrane with a pneumatic otoscope and apply positive and negative pressure to determine tympanic membrane mobility. In serous otitis media, mobility is greatly reduced. This can be a source of disequilibrium, particularly in children. Purulent discharge, tympanic perforation, or white pearly masses behind the tympanic membrane can be signs of chronic otitis media or cholesteatoma. If debris or pus is present, clean these out with a wax curette or suction and look for perforations and retraction pockets. Retraction pockets are most common at the superior border of the tympanic membrane. Evaluate hearing using a 512-Hz tuning fork. If you have normal hearing, use your hearing as the standard against which to compare the patient's hearing. Check hearing by air conduction (fork near the ear canal) and bone conduction (base of fork applied to the mastoid bone). (For more detailed information, see Chapter 126.) A sensory hearing loss can be a part of a labyrinthine disorder affecting both hearing and balance, or a lesion in the internal auditory meatus or at the brainstem. Conductive hearing losses can be due to chronic otitis media or cholesteatoma.

Next, evaluate vision in each eye, using a Snellen chart or a reading card. Do an ophthalmoscopic examination of the eye, the retina, and the optic nerve. While observing retinal features, also look for nystagmus (slow eye movement in one direction with a rapid return). Examine eye movements in all four primary directions and look for nystagmus in each gaze direction. Check visual fields by confrontation.

Check cranial nerves, particularly V (facial sensation, corneal reflex) and VII (facial motion). Check for tremor, limb ataxia, past pointing, and rapid hand and fine-finger movements to assess cerebellar function. Do a minimal caloric test by instilling 1 cc of ice water into each ear canal while the patient is supine with chin tucked toward chest by 30 degrees. Observe nystagmus, and compare nystagmus responses between stimulation of both sides. Wait 5 minutes between tests of each ear.

If patients show signs of ear disease or neurologic impairment, further evaluation, probably by a specialist, is indicated.

In patients with disequilibrium or vertigo, laboratory tests can now provide accurate objective information about labyrinthine, eye-tracking, auditory, visual, and somatosensory function. Computed tomography and nuclear magnetic resonance scanning provide detailed anatomic information when a lesion of the inner ear, mastoid or cerebellopontine angle is suspected. In patients where symptoms persist or where suspicion of severe organic disease is present (unilateral loss of hearing or vestibular function or signs of central or peripheral nervous system disease), referral to an otolaryngologist, neurotologist, or neurologist is recommended.

Basic Science

See Chapter 123, pp 604–605.

Clinical Significance

See Chapter 123, pp 604–605.

Reference

Barber HO, Stockwell, CW. Manual of electronystagmography. 2nd ed. St. Louis: CV Mosby, 1980.